MYD-IMX28X Development Board

- *MYC-IMX28X CPU Module as Controller Board*
- *Two 1.27mm pitch 80-pin SMT Male Connectors for Board-to-Board Connections*
- *454MHz Freescale i.MX28 Series ARM926EJ-S Processors*
- *128MB DDR2 SDRAM, 256MB Nand Flash, 128KB SPI Data Flash*
- *Serial ports, USB Host, OTG, RS485, TF, Audio, LCD*
- *Two Ethernet for i.MX287 and One Ethernet for i.MX283*
- *Two CAN for i.MX287*
- *Optional 4.3 or 7 inch LCD/TSP*
- *Ready-to-Run Linux 2.6.35 Development Kit*

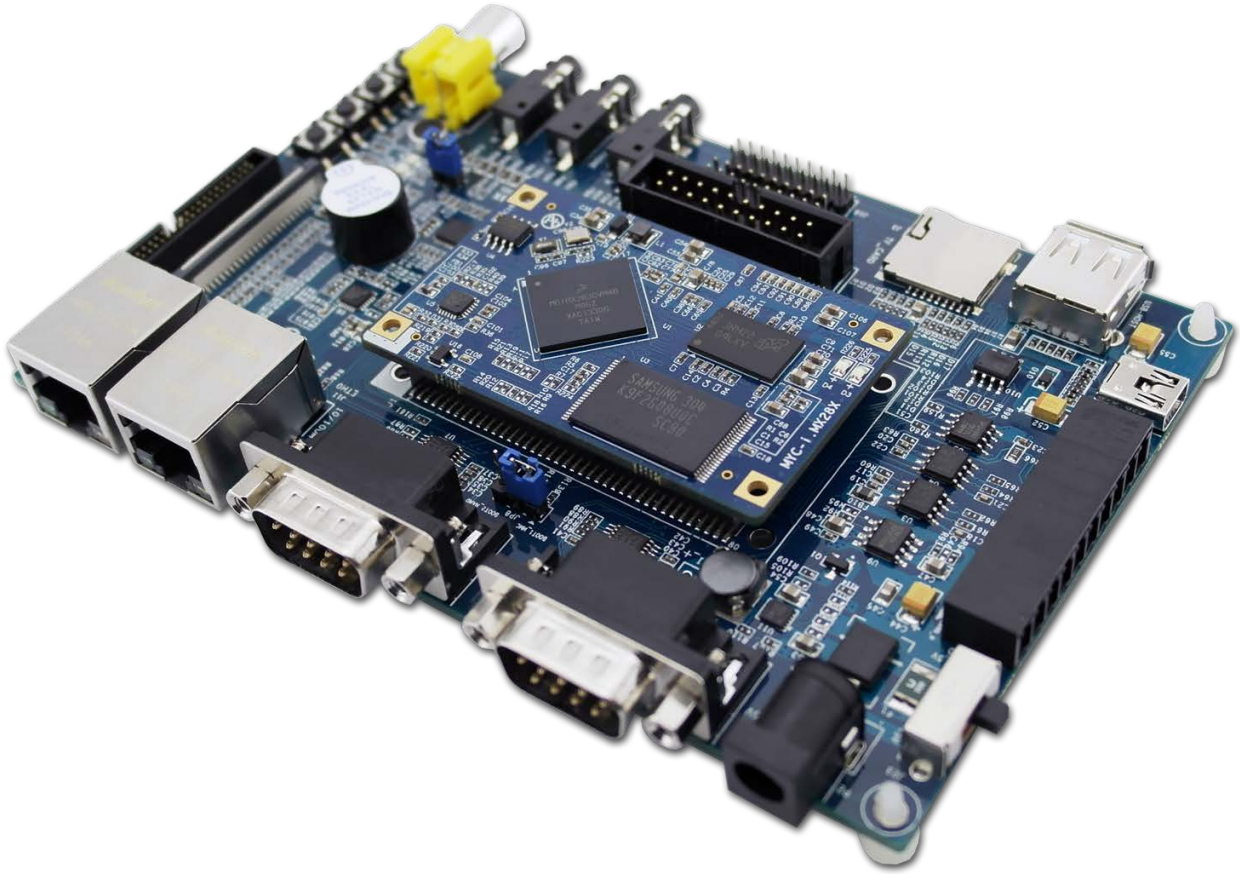

Figure 1-1 MYD-IMX28X Development Board

Description

The MYD-IMX28X Development Board designed by MYIR is a cost-effective and power-efficient ARM Evaluation Kit (EVK) for Freescale i.MX28 family of multimedia applications processors which has an ARM926EJ-S Core, with speed up to 454 MHz. The board can support running Linux operating system, which allows developers to use it as an i.MX28 reference platform to quickly start their own design. The board takes full features of the i.MX28 ARM processor and has exposed a comprehensive set of peripherals and connectivity options to make the board suitable for smart gateways, human-machine interfaces (HMIs), handheld devices, scanners, portable medical, experimental education and more other industrial applications.

The MYD-IMX28X Development Board is using the MYC-IMX28X CPU module as the heart of the system which is

an ARM9-based system-on-module (SOM) integrated with the i.MX28 processor, 128MB DDR2 SDRAM, 256MB Nand Flash and Ethernet PHY. It is connected to the base board through two 1.27mm pitch 80-pin connectors. The base board has extended many peripherals and interfaces through headers and connectors, featuring 1 x RS232, 1, Debug, 2 x USB ports, up to 2 x Ethernet, 2 x CAN, 1 x RS485, TF, Audio, LCD, JTAG, etc.

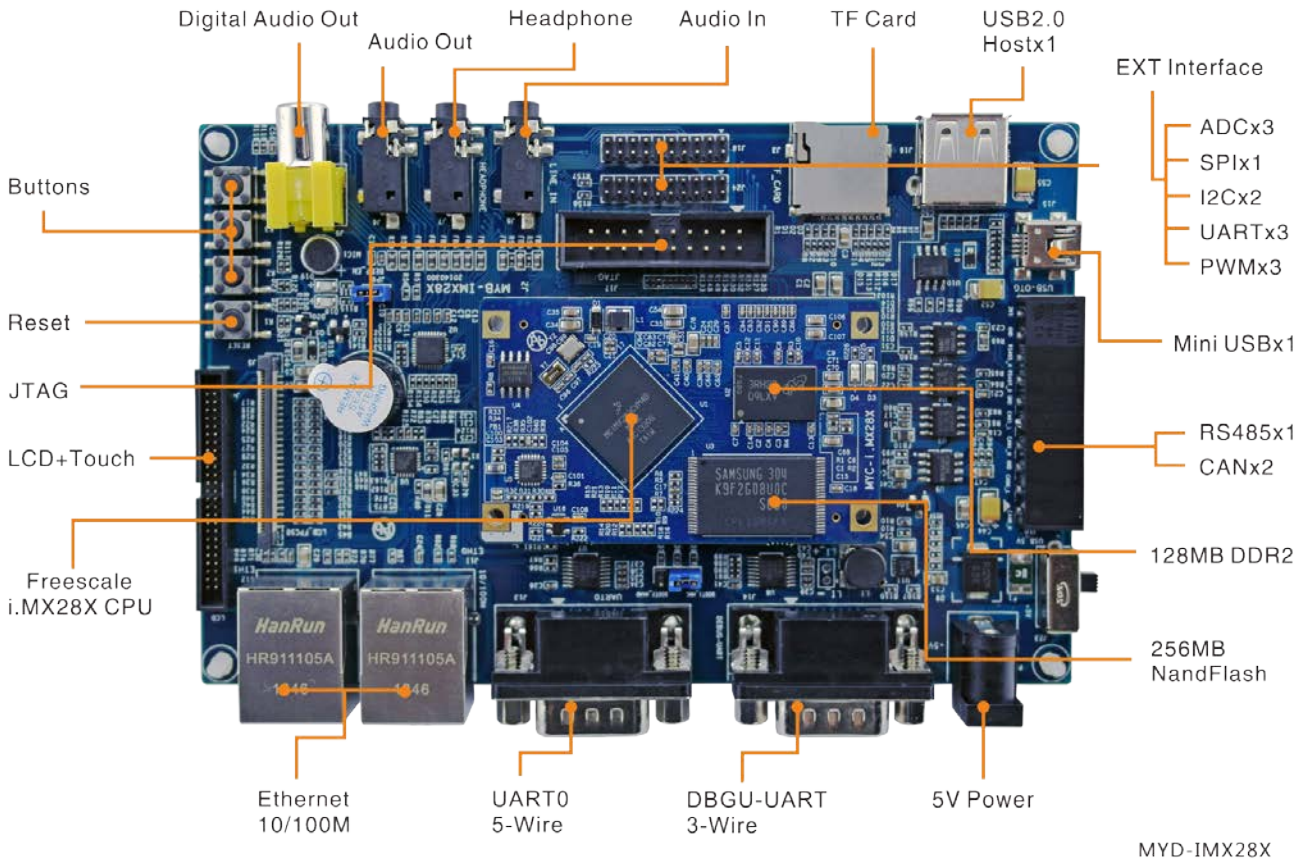

Figure 1-2 MYD-IMX28X Development Board Interface Diagram

MYIR offers the board with i.MX283 or i.MX287 ARM9 CPU by default; user can integrate a different MYC-IMX28X CPU module on the same base board, thus making two variants of i.MX28 evaluation boards.

- *MYD-IMX283 Development Board* – with *MYC-IMX283 CPU Module* for Freescale *i.MX283*
- *MYD-IMX287 Development Board* – with *MYC-IMX287 CPU Module* for Freescale *i.MX287*

The MYD-IMX283 and MYD-IMX287 boards only have a few differences as described in below table 1-1:

Model	MYD-IMX283	MYD-IMX287
Processor	i.MX283	i.MX287
CAN	0	2
Ethernet	1	2

Table 1-1 Differences of MYD-IMX283 and MYD-IMX287

The MYD-IMX28X board comes with Linux2.6.35 software packages, detailed documents, necessary cable

accessories as well as optional 4.3- and 7-inch LCD (with touch screen) to provide a complete Freescale i.MX28 starter kit and enable a quickly start of evaluation of i.MX28 family applications processors.

The MYD-IMX28X Development Kit includes following items:

MYD-IMX28X board

Ethernet cable

USB cable

5V Power Adapter

Product DVD

Optional 4.3- or 7-inch LCD/TSP

Serial cable

Figure 1-3 MYD-IMX28X Development Kit

Hardware Specification

The i.MX28 is a low-power, high-performance applications processor optimized for the general embedded industrial and consumer markets. The core of the i.MX28 is Freescale's fast, power-efficient implementation of the ARM926EJ-S™ core, with speeds of up to 454 MHz.

The device is suitable for a wide range of applications, including the following:

- Human-machine interface (HMI) panels: industrial, home
- Industrial drive, PLC, I/O control display, factory robotics display, graphical remote controls
- Handheld scanners and printers
- Patient-monitoring, portable medical devices
- Smart energy meters, energy gateways
- Media phones, media gateways

The integrated power management unit (PMU) on the i.MX28 is composed of a triple output DC-DC switching converter and multiple linear regulators. These provide power sequencing for the device and its I/O peripherals such as memories and SD cards, as well as provide battery charging capability for Li-Ion batteries.

The i.MX28 processor includes an additional 128-Kbyte on-chip SRAM to make the device ideal for eliminating external RAM in applications with small footprint RTOS.

The i.MX28 supports connections to various types of external memories, such as mobile DDR, DDR2 and LV-DDR2, SLC and MLC NAND Flash.

The i.MX28 can be connected to a variety of external devices such as high-speed USB2.0 OTG, CAN, 10/100 Ethernet, and SD/SDIO/MMC.

Family Comparison				
Feature	**i.MX280**	**i.MX283**	**i.MX286**	**i.MX287**
Temp. ranges	-20°C to +70°C -40°C to +85°C	-20°C to +70°C -40°C to +85°C	-20°C to +70°C -40°C to +85°C	-40°C to +85°C
LCD	-	Y	Y	Y
Ethernet	X1	X1	X1	X2
L2 Switch	-	-	-	Y
CAN	-	-	X2	X2
SDIO*	X4	X4	X4	X4
SPI*	X4	X4	X4	X4
S/PDIF Tx	-	-	Y	Y
*** Represents maximum available. Some pins are shared with other interfaces**				

Table 1-2 i.MX28 Family Comparison

The MYD-IMX28X has a CPU Module MYC-IMX28X integrated with Freescale i.MX28 processor, DDR2 SDRAM, Nand Flash, Data Flash and Ethernet PHY on it, which exposes many of these features to the user in support of developing specific solutions. The CPU Module can be mounted directly onto the base board through two 1.27mm pitch 80-pin expansion connectors. This board is characterized as follows:

Mechanical Parameters

- Dimensions: 140mm x 90mm (base board), 62mm x 38mm (CPU Module)
- PCB Layers: 4-layer design (base board), 6-layer design (CPU Module)
- Power supply: +5V
- Working temperature: 0~70 Celsius (commercial grade) or -40~85 Celsius (industrial grade)
  Note: Our products are delivered of commercial grade (0~70 Celsius) by default. Anyhow the MYD-IMX28X boards based on Freescale ARM926EJ-S processors can work for industrial applications working in harsh environment with working temperature ranging from -40 Celsius to 85 Celsius. Please contact MYIR for price and availability of products of industrial grade if you needed.

The MYD-IMX28X Controller Board (MYC-IMX28X CPU Module)

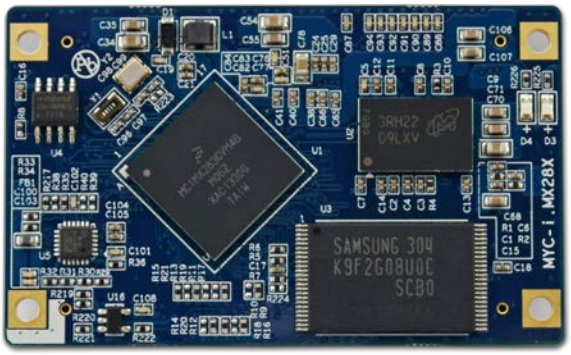

Figure 1-4 MYC-IMX28X Top-view

Figure 1-5 MYC-IMX28X Bottom-view

Processor

- Freescale i.MX283, i.MX287 Applications processor
  - Up to 454MHz ARM926EJ-STM core with 16KB/32KB I and D Cache
  - 128 kbytes of integrated low-power on-chip SRAM
  - 128Kbytes of integrated mask-programmable on-chip ROM
  - 1280 bits of on-chip one-time-programmable(OCOTP)ROM
  - 16-bit mobile DDR(mDDR)(1.8V),DDR2(1.8V)and LV-DDR2(1.5V),up to 205MHz DDR clock frequency with voltage overdrive
  - Support for up to eight NAND Flash memory devices with up to 20-bit BCH ECC

Memory

- 128MB DDR2 SDRAM
- 256MB Nand Flash
- 128KB SPI Data Flash

Peripherals and Signals Routed to Pins

- On-board Ethernet PHY
- One power indicator (Red LED)
- One user LED (Blue)
- Two 1.27mm pitch 2 x 40-pin SMT male expansion connectors can carry out interfaces below
  - Ethernet (two for i.MX287, one for i.MX283)
  - 2 x USB2.0 OTG ports
  - Up to 4 x Serial ports
  - 1 x I2C
  - 2 x SPI
  - Up to 8 x ADC (one high-speed ADC, seven low-resolution ADC)
  - Up to 5 x PWM
  - 1 x SDIO

The MYD-IMX28X Base Board

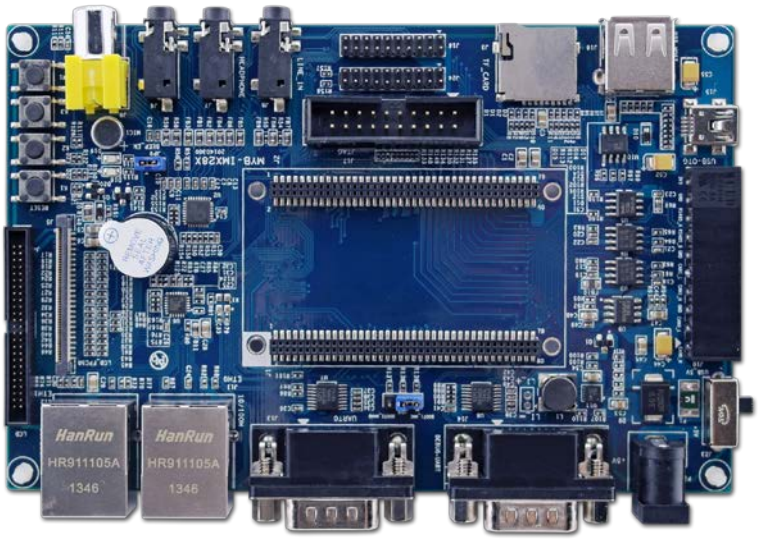

Figure 1-6 MYD-IMX28X Base Board

- Serial ports
  - 1 x 3-wire RS232 Debug serial port (DB9)
  - 1 x 5-wire RS232 serial port (UART0)
  - 1 x RS485
- USB
  - 1 x USB2.0 Host port
  - 1 x USB2.0 OTG port
- 10/100Mbps Ethernet interfaces (two for i.MX287, one for i.MX283)
- 2 x CAN interface (only for i.MX287)
- 1 x TF card slot
- 1 x LCD interface (16-bit true color, supports optional 4.3-inch and 7-inch TFT LCD)
- 1 x 4-wire resistive touch screen interface
- 1 x Audio input port (3.5mm jack)
- 1 x Audio output port (3.5mm jack)
- 1 x Headphone output port (3.5mm jack)
- 1 x Mic In interface
- 1 x Buzzer
- 1 x 2.54mm pitch 20-pin JTAG interface
- 4 x Buttons (1 x Reset button, 3 x User buttons)
- 2 x User LEDs (Blue)
- 2 x 2.0mm 20-pin expansion connectors
  - 3 x ADC (one high-speed ADC, two low-resolution ADC)
  - 1 x SPI
  - 2 x I2C
  - 3 x UART
  - 3 x PWM

Function Block Diagram

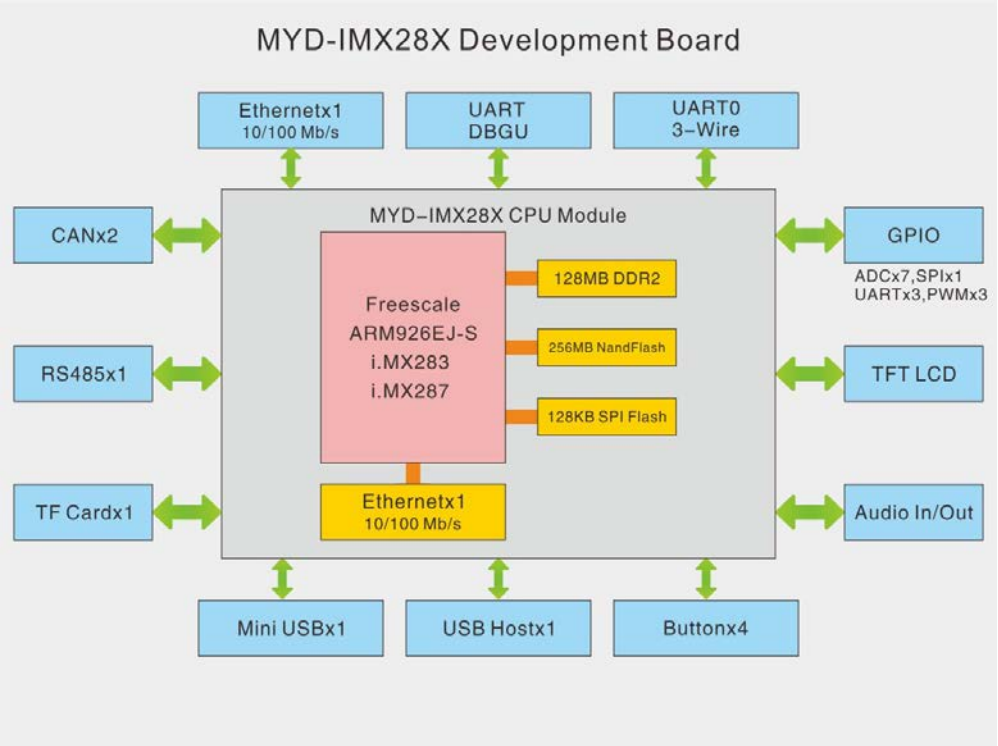

Figure 1-7 Function Block Diagram of MYD-IMX28X

Dimension Chart of MYD-IMX28X

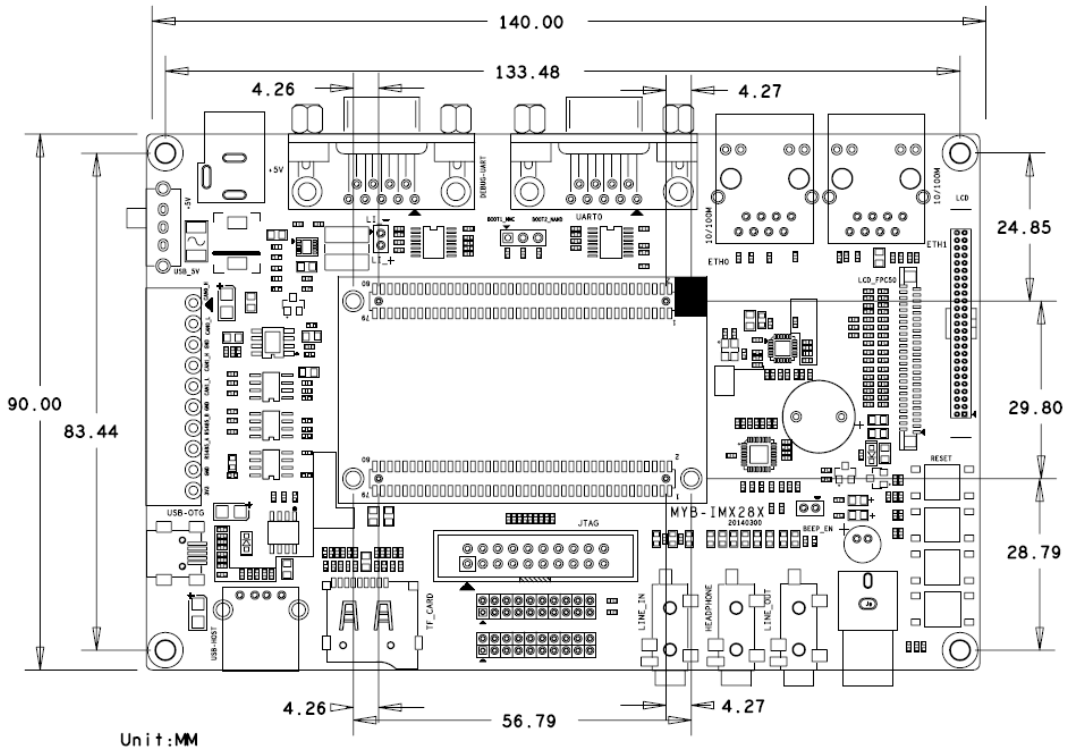

Figure 1-8 Dimension Chart of MYD-IMX28X

Software Features

MYIR's i.MX28 Starter Kit MYD-IMX28X supports for Linux and is provided with software packages. Many peripheral drivers are in source code to help accelerate customers' designs with a stable and reliable hardware and software platform. The software features are summarized as below:

OS	Item	Features	Description
Linux	Bootstrap	u-boot	The secondary bootstrap
	Kernel	Version	Linux 2.6.35
	Drivers	USB Host (support both OHCI and EHCI transmission modes), USB Device (Gadget), Ethernet, MMC/SD, NandFlash, TWI (I2C), SPI, Audio (SGTL5000), LCD Controller (supports 4.3-inch, 7-inch and 10.2-inch LCD), RTC, TouchScreen (4-wire resistive), PWM, UART, CAN, Power Management Unit, LED (GPIO LED and PWM LED)	
	File system	UBIFS	Provide image file

Order Information

<table>
<tr><th>Product Item</th><th>Part No.</th><th>Packing List</th></tr>
<tr><td>MYD-IMX283 Development Board</td><td>MYD-IMX283</td><td rowspan="6">➢ One MYD-IMX28X Development Board
➢ One Net cable
➢ One USB cable
➢ One Serial cable
➢ One 5V/2A Power adapter
➢ One Product DVD
(including user manual, datasheet, schematic in PDF format and software packages)

Add-on Options
➢ MY-LCD43TP 4.3-inch LCD Module
➢ MY-LCD70TP 7-inch LCD Module
➢ MYC-IMX28X CPU Module</td></tr>
<tr><td>MYD-IMX287 Development Board</td><td>MYD-IMX287</td></tr>
<tr><td>MY-LCD43TP 4.3-inch LCD Module</td><td>MY-LCD43TP</td></tr>
<tr><td>MY-LCD70TP 7-inch LCD Module</td><td>MY-LCD70TP</td></tr>
<tr><td>MYC-IMX283 CPU Module</td><td>MYC-IMX283</td></tr>
<tr><td>MYC-IMX287 CPU Module</td><td>MYC-IMX287</td></tr>
<tr><td colspan="3">Remark:
1. One MYD-IMX28X Development Board includes one CPU module MYC-IMX28X mounted on the base board. If you need more CPU module, you can order extra ones.
2. For Price information, please contact MYIR.
3. Our products are delivered of commercial grade (0~70 Celsius) by default. Anyhow the MYD-IMX28X boards based on Freescale ARM926EJ-S processors can work in harsh environment with working temperature ranging from -40 to 85 Celsius. Please contact us for price and availability of products of industrial grade if you needed.
4. We accept custom design based on the MYD-IMX28X, whether reducing, adding or modifying the existing hardware according to customer's requirement.</td></tr>
</table>

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